WE CLAIM:

1. A method for producing hydrocyanic acid synthesis catalyst characterized by sequential exposure of an iron surface to oxidative and reductive atmospheres.

2. A method for producing hydrocyanic acid synthesis catalyst according to claim 1 wherein the inner surface of an iron pipe is sequentially exposed to oxidative and reductive atmospheres.

3. A method for producing hydrocyanic acid synthesis catalyst according to claim 1 or claim 2 wherein the cycle of exposure to oxidative and reductive atmospheres is carried out more than once.

4. The method of claim 1 wherein the oxidative atmosphere is a gas containing from about 5% to 30% by volume of oxygen.

5. The method of claim 1 wherein the reductive atmosphere is a gas containing between 1% and 99% by volume of hydrogen.

6. The method of claim 1 wherein the oxidative atmosphere is a gas containing from about 5% to 30% by volume of oxygen and the reductive atmosphere is a gas containing between 1% and 99% by volume of hydrogen.

7. The method of claim 1 wherein the exposure of the iron surface to the oxidative atmosphere is conducted under the conditions that the temperature is in the range of about 300°C to 650°C, the pressure is in the range of from about 6 kPa to 150 kPa, a space velocity of from about 10 to 150h^{-1} and the time is from about 5 to 300 minutes.

8. The method of claim 1 wherein the exposure of the iron surface to the reductive atmosphere is conducted under the conditions that the temperature is

in the range of about 300°C to 650°C, the pressure is in the range of from about 6 kPa to 150 kPa, a space velocity of from about 10 to 150h^{-1} and the time is from about 5 to 300 minutes.

9. The method of claim 1 wherein the exposure of the iron surface to the oxidative and reductive atmospheres is conducted under the conditions that the temperature is in the range of about 300°C to 650°C, the pressure is in the range of from about 6 kPa to 150 kPa, a space velocity of from about 10 to 150h^{-1} and the time is from about 5 to 300 minutes.

10. A hydrocyanic acid synthesis catalyst characterized by the presence of a surface having an oxide layer that has been prepared by sequential exposure of an iron surface to oxidative and reductive atmospheres.

11. A method for making hydrocyanic acid which comprises exposing formamide to a catalyst made by the method of claim 1 under reaction conditions to provide hydrocyanic acid.

12. The method of claim 11 wherein the formamide is a gas, and the reaction conditions include a temperature in the range of about 300°C to 600°C, a pressure of from about 6 to 150 kPa, a space velocity of from about 50 to 1500h^{-1} for between about 60 to 3000 minutes.